Executive Summary

Once expected to be eliminated as a public health problem, infectious diseases remain the leading cause of death worldwide. Dramatic changes in society, technology, and the environment together with the diminished effectiveness of certain approaches to disease control have propelled this nation and the rest of the world into a new era; the spectrum of infectious diseases is expanding and many infectious diseases once thought conquered are increasing. To effectively address emerging infectious diseases, the Centers for Disease Control and Prevention has developed a strategic plan emphasizing surveillance, research, and prevention activities critical to maintaining a strong defense against infectious diseases that affect, or threaten to affect, the public's health.

The Concept of Emergence

Emerging infectious diseases are diseases of infectious origin whose incidence in humans has increased within the past two decades or threatens to increase in the near future.[1]

Many factors, or combinations of factors, can contribute to disease emergence (Table 1). Newly emergent infectious diseases may result from changes or evolution of existing organisms; known diseases may spread to new geographic areas or new human populations; or previously unrecognized infections may appear in persons living or working in areas undergoing ecologic changes, such as deforestation or reforestation, that increase their exposure to insects, animals, or environmental sources that may harbor new or unusual infectious agents.

Reemergence may occur because of the development of antimicrobial resistance in existing agents (e.g., gonorrhea, malaria, pneumococcal disease) or breakdowns in public health measures for previously controlled infections (e.g., cholera, tuberculosis, measles).

The Threat of Emerging Infections

In the United States and elsewhere, infectious diseases increasingly threaten public health and contribute significantly to the escalating costs of health care. As society, technology, and the environment change, pathogens evolve or spread, and the spectrum of infectious diseases expands.

Emerging infections, such as acquired immunodeficiency syndrome (AIDS) and tuberculosis (TB), vividly illustrate that no nation can be complacent regarding human vulnerability to the microorganisms with which we share our environment. Since the early 1970s, the U.S. public health system has been challenged by many newly identified pathogens and syndromes, such as Legionnaires' disease, Lyme disease, toxic shock syndrome, HIV/AIDS, hepatitis C virus, and, most recently, hantavirus.

In addition, the incidence of many diseases widely presumed to be under control—such as cholera, malaria, dengue hemorrhagic fever, yellow fever, and TB—has increased in many areas or spread to new regions or populations throughout the world. As a consequence of widespread use and misuse of antimicrobial drugs, this country also faces the emergence of drug-resistant pathogens . Even drugs used in the treatment of common bacterial infections are becoming increasingly ineffective, resulting in prolonged illnesses, higher mortality rates, and higher health care costs.

Emerging infections place an excessive burden on persons with lowered immunity, such as those infected with HIV and those receiving medications for cancer or organ transplantation—populations that are increasing in number; persons being cared for in institutional settings, such as hospitals and nursing homes; and traditionally underserved populations, such as the homeless, migrant farm workers, and others of low socioeconomic status.

Table 1. Factors in Emergence*

Categories	Specific Examples
Societal events	Economic collapse; armed conflict; population movements
Health care	New medical devices; organ transplantation; drugs causing immunosuppression; widespread use of antibiotics
Food production	Imported fruits and vegetables; antibiotic use in animal feed; changes in food processing and packaging
Human behavior	Sexual behavior; drug use; travel; diet; outdoor recreation; use of child care facilities
Environmental changes	Deforestation/reforestation; changes in water ecosystems; flood/drought; dams; global warming; natural disasters
Public health infrastructure	Curtailment or reduction in prevention programs; inadequate communicable disease surveillance; lack of trained personnel (epidemiologists, laboratory scientists, vector and rodent control specialists)

*Adapted from reference 1.